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ABSTRACT

In television programing, pacing is generally defined as the relative speed with which a program appears to progress or the rate at which its material is presented. A study examined whether a fast-paced news show would produce a higher degree of accurate recall of content than would a slow paced program, and whether differences in pacing would affect the degree of accurate recognition of program content. Sixty-two college students were randomly assigned to two counter-balanced presentation sequences where they saw two specially constructed program segments, one fast paced, one slow paced. Pacing had been determined by a researcher-designed program pacing value scale. After viewing each segment, the subjects completed recall and recognition measures. In addition, after viewing both segments, the subjects completed an instrument that asked them to compare the effectiveness of each segment and to list differences, if any, they perceived in the pacing of the two. The findings suggest that pacing could be a major factor in recall of program content and that faster pacing resulted in greater recall of television news. (A copy of the Program Pacing Value Scale is appended.) (FL)

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RADIO-TELEVISION JOURNALISM
DIVISION

EFFECTS OF PACING ON RECALL AND RECOGNITION OF INFORMATION IN TELEVISION NEWS PROGRAMS

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Effects of Pacing on Recall and Recognition of Information in Television News Programs.

This research was conducted to assess the effect of slow and fast-paced television programming upon recall and recognition of a program's informational content. The purpose was primarily to look at any connection which might exist between pacing and recall-and/or-recognition of the content of news programs.

Pacing is generally defined as the relative speed with which a television program appears to progress, or the rate at which its material is presented. Many factors--scene changes, audio changes, speed of reading, types of visual presentations--affect the quality known as "pacing". The author's Program Pacing Value Scale takes several of these key factors into account and quantifies them.

In recent years there has been a tremendous increase in the number of faster-paced news programs. The major rationale for such changes was ratings of the number of people watching the newscasts. Since television has been the chosen medium of most Americans for obtaining information about the world around them since 1973 (Roper, 1975) and since it is the only source of news for fifty-percent of the American population (Mankiewicz & Swerdlow, 1978), it is important that the effectiveness of the programs in communicating their information be taken into consideration by television news producers as well as concern over the number of people who watch.

For the most part, programmatic decisions have been made with little information about the effect the increases in pacing have had

upon the effectiveness of the programs in communicating their content. The television news producers have had little information to help them in considering this issue. Research in this area is relatively new. To date most television research has centered on program content analysis, the effect of formal features (the different production aspects of television) upon attention to programs, and the effect of pacing upon viewer behavior. Little research has been done on the effect of formal features upon recall or retentiveness of program content. Almost none of the limited amount of research which has been done has been directed to questions about program pacing, and almost none of it has been done with adults.

Some research on pacing has been done with children. While it may not exactly apply to adults, it does give some pertinent indications. Many of the decisions to increase program pacing are prompted by desires for increased ratings. Since television station income correlates positively with the number of viewers (Barnow, 1978) stations seek to develop the largest audiences possible. According to data from a recent Nielsen Television Index (1978), faster-paced programs have higher ratings. Some studies with children indicate that attention to the television program decreases as "bit" length increases (Anderson & Levin, 1976). Other studies indicate that rapid pacing--whether defined as audio or video changes (Levin, 1974; Anderson & Levin, 1976; Levin & Anderson, 1976) or as a "strong pulsing, driving rhythm in both video and audio tracks" (Rust, 1971a,1971b)--results

in high attention for three-to-five-year-old children while overly long bits resulted in low attention (Reeves, 1970). These findings occurred in situations where normal distractions were present. In viewing situations devoid of normal distractions, Anderson-Levin-and Lorch (1977) found that pacing differences did not affect attention to the television set by preschoolers watching fast and slow-paced Sesame Street test programs.

Television news is delivered to the home via open broadcast or cable. In the early evening especially there are many competing distractions. The studies with children would indicate that under those conditions increased pacing would result in higher attention to the program. It must be pointed out that those studies were conducted using Sesame Street and Electric Company program segments and with children as subjects. While those programs have informational content, there is nothing to indicate whether the same results would be found with adult subjects. Even if the results could be generalized to adults, the studies with children do not directly link attention-to-the-program to recall of the informational content.

The one study which did attempt to determine the effect of pacing upon preschoolers' comprehension and cognitive abilities showed that there was no significant difference in the percentage of all questions about program content answered correctly by preschoolers who watched Mister Rogers' Neighborhood and Sesame Street programs

(Singer, Singer, Tower, & Biggs, 1977). Mister Rogers' Neighborhood was considered a slower-paced program, and Sesame Street was considered a faster-paced program by the researchers.

In general, the study showed no difference in amount of program content learned in spite of the perceived differences in pacing and the differences in the type of content of the two programs. Again, the results with older children and adults were not measured. The question of the age of the viewer and the cognitive development of the viewer has been the subject of several studies. Samuels (1976) found that immediate recall of content of a videotape was not related to a child's stage of cognitive development but rather to the way the event was presented in the tape. Long-term recall (measured after five months) indicated that the subjects were more likely to recall the taped event if the reasoning used in the segment was equivalent in complexity to the subject's level of cognitive development at the time the videotape was viewed.

A study of television information processing by children indicates that both cognitive level and the intensity and extent of familiarity with television are important determinants of a child's proficiency in processing televised information (Wright, Watkins, Huston-Stein, undated). The study indicates that active processing of sequentially presented material requires increasingly sophisticated cognitive techniques (complex time-sharing and decision-making at a pace

comparable to reflective analysis) but that increased familiarity with the medium did as much to improve processing skills as did increase in age. The ability to discern and interpret correctly major messages within a program did increase with age for programs where a plot had to be considered. But programs that contained less plot and required less logical re-sequencing were easier for younger children and children less familiar with the formal features of television. For them, using only normal production techniques to highlight major content themes facilitated selective attention while the use of unusual or novel production techniques which were not related to the story's form or meaning and which appeared unpredictably distracted the younger or less experienced viewer and interfered with the processing of central content of the program.

Television news and other informational programs are sequentially presented. That is, one story or bit is presented at a time. Program progress is linear. According to Wright, Watkins, and Huston-Stein, that means that such programming requires an active processing using higher cognitive development levels or greater familiarity with the particular "formal features" used in the production. Since most television news programs match audio and video presentations of content as a normal method of production and also avoid unusual or unpredictable production techniques, the only formal feature question which enters into consideration is the pacing of the program.

HYPOTHESES FOR THIS STUDY

Since little research has been done on the effect of pacing upon retention of program content, pacing would seem to be an appropriate area for further research. For this study a determination was made to look at the effect of fast and slow pacing of television news upon recall and recognition of program content. The study addressed two particular questions: "Does different program pacing affect the amount of program content which viewers can recall?" and "Does different program pacing affect the amount of program content which viewers can recognize when presented clues as to the program content?" The research with children generally indicated that pacing would not make a difference.

A pilot study for this research was conducted using six subjects, graduate students at a major private university in Cambridge, Massachusetts. That pilot study showed a significant difference in recall with the faster paced program being more effective. It also showed no significant difference in recognition. On the basis of that pilot study, and without the benefit of other research to either confirm or repudiate its findings, the hypotheses for this research were:

1. A faster-paced news program will result in a higher degree of accurate recall of program content than a slower-paced program.
2. Differences in program pacing will have no effect upon the degree of accurate recognition of program content.

METHODS:

For the study two television news program segments were selected from videotapes of actual news broadcasts aired in Boston, Massachusetts. The first was labeled the "slow pacing" tape for the study. It had a pacing value of 15.43 as determined by the author's Program Pacing Value Scale. The second tape was labeled as the "fast pacing" tape for the study. It had a pacing value of 17.32 on the scale. Each tape contained five news stories. The stories were comparable in complexity of information and the number of essential news points. Because of presentational differences the slower-paced program segment ran 8.65 minutes in length while the faster-paced program segment ran 6.33 minutes in length. The two segments were presented in counter-balanced order with subjects randomly assigned to fast-slow and slow-fast presentation sequences.

SUBJECTS:

Sixty-two undergraduate students at the University of Bridgeport in Connecticut took part in the study. They were randomly assigned to the two presentation sequences. Thirty-two watched the slower-faster presentation sequence. Thirty watched the faster-slower sequence.

DESIGN:

An experimental design was used with counter-balanced order of presentation of the two videotaped segments. The content of the program segments was transcribed and was tested with other subjects who did

not view the videotapes to see if either of the segments contained material which was inherently more or less memorable. No significant differences were found.

The pacing of the program segments was determined by use of the author's Program Pacing Value Scale. This scale was developed for this study. It was validated by showing the faster and slower-paced tapes chosen for this study to four people who are active in the production of television programming. A third video-tape which had a pacing value of 16.48 was also shown to the group. The television producers all rated the tape with a pacing value of 15.43 as slow, the tape with a pacing value of 16.48 as moderately paced, and the tape with a pacing value of 17.32 as fast paced.

For the study, mean scores on recall for the slow-paced program and the fast-paced program were compared as were mean scores on recognition for the slow-paced program and the fast-paced program. Mean combination scores (recall + recognition) were also compared for the two program segments. Comparisons were done using t-tests.

INSTRUMENTS:

To obtain the television news program segments for use in the study, the television news programs on the three major local commercial stations in Boston were taped and analyzed. Two trained observers rated sixteen different segments for pacing value. Inter-rater reliability for the sixteen trials was: $r = .95$. The two raters

also kept track of the average pacing value of the three local stations' news programs. It was determined that of the three stations Channel five, WCVB-TV, was normally the slowest at the time of the selection. The mean pacing value for one week of programs was 15.05 for news segments. The fastest paced of the three stations was Channel seven, WNAC-TV. Its mean pacing value was 17.70. One segment from a channel seven program was selected for use in the testing. The pacing value of the channel seven segment was 17.32. The channel five segment chosen for use in the study had a pacing value of 15.43. The channel five segment was designated as the "slower-paced" tape and the channel seven segment was designated as the "faster-paced" tape.

The program Pacing Value Scale was developed for this study. It seeks to quantify several of the formal features of television production which contribute to the concept which is referred to as pacing. Pacing, as was discussed above, is generally considered to be the rate at which a program progresses (moves through the material it presents). Several factors have a bearing on the rate at which the program progresses. Some of them create a feeling of fast progress and some create a feeling of slow movement through material. The Pacing Value Scale is an attempt to quantify those factors. Changes in scenes, voices, keys, background visuals, background audio, and primary video all contribute points to the scale. In addition after these points are totaled and divided by the time of the segment to produce a per-minute value, the number of words-per-second is added to take into account the speed at which the talent in the segment speak.

The speed of the speech contributes greatly to the perception of pacing. This final figure is the segment's "pacing value" as that term is used in this report. A copy of the Program Pacing Value Scale is included in Appendix One. As was noted, the scale was validated by showing program segments of various pacing values to active television producers. Their ratings matched the pacing value according to the scale in all cases.

Transcriptions were made of the two tapes used in the study. From the transcriptions, content related multiple-choice questions were developed for each news story in the two segments. These instruments were used in recognition testing. The recall instrument consisted of a blank sheet of paper with numbered lines and instructions to list as many different stories as could be recalled from the news segment just viewed. The instructions directed the subjects to list stories by a two or three word descriptive phrase such as "New York City Fire". These instruments were validated during the pilot study.

A third instrument used requested participants to indicate which program segment and which news anchors they considered to be the more effective communicator. The instrument also gave them a definition of pacing and asked them: 1. to indicate if they perceived a difference in pacing, and 2. if they did, to indicate which program was faster paced. Normal demographic data was also collected on all participants.

PROCEDURES:

After the tapes had been selected, and the instruments developed and validated, sixty-two undergraduate students who volunteered to take part in the study were randomly assigned to the two presentation sequences. Thirty-two subjects watched the slow-fast sequence and thirty watched the fast-slow sequence. Subjects were told of the nature of the study, completed a demographic questionaire, and were then shown the first tape in their sequence. After having viewed the program segment, they were presented with the recall instrument and were asked to list as many stories as they could recall from the segment they had just viewed. When they completed the recall instrument, they were presented the recognition instrument. When they had completed the recognition instrument, they were shown the second tape in the sequence. The measurement procedure was repeated. When the second recognition instrument was completed, subjects were asked to complete a comparison instrument. This instrument asked for their views on the effectiveness of each program segment as a communicator of information, on the effectiveness of the anchors in the program segments, and on differences they perceived in the pacing of the two segments if any.

The tapes were played on a videotape machine and were viewed on a monitor in a classroom atmosphere. Viewing groups ranged from six to twenty-five subjects.

RESULTS:

The group scores were compared using matched-pairs T-tests. Significant differences were found on the Recall variable ($T=2.98$; $p = .004$) which indicated that participants were able to recall more information from the faster paced program than from the slower paced program.

No significant difference was found on the recognition variable. It appears that when provided with the visual word clues of the questions, the participants were able to recognize an equivalent amount of information from both the fast and slow-paced program segments.

Program order, Sex, Educational Level, average hours of tv viewing per week had no effect upon recall.

The slower paced program and its anchor team were selected by the respondents as the more effective communicators. On separate questions, sixty-one-point-three percent of the respondents chose the slower-paced program as the more effective communicator, and fifty-percent chose the anchor team from the slower-paced program as the more effective talent. Thirty-eight-point-seven percent selected the faster-paced program, and thirty-point-six percent selected the anchor team from the faster paced program as the more effective communicators. Nineteen-point-four percent thought that the anchor teams were equally effective.

Given the definition of pacing as, "Pacing is a term used to describe the relative speed with which a program progresses." participants

were asked if they thought there was any difference in the pacing of the two programs. Eighty-seven-point-one percent indicated a perceptible difference in pacing. Of those perceiving a difference, seventy-one-point-seven chose as faster paced the program rated faster on the Program Pacing Value Scale.

It is also interesting that the program which was in fact the more effective communicator of information was not perceived that way by the majority of the participants. Sixty-one-point-three percent chose the slower-paced program. Yet analysis of their responses shows that seventy-four percent actually scored higher or the same on the recall measure for the faster tape as they did on the recall measure for the slower tape. Of those subjects who chose the faster tape as more effective, ninety-two percent scored higher or the same on the recall measure for the faster tape as they did on the recall measure for the slower tape. So it appears that perception of effectiveness may not relate to actual effectiveness.

CONCLUSIONS:

On the basis of this study, it seems reasonable to assume that for the newscasts in question, pacing does affect the degree of accurate recall of information. However, when asked specific questions about the content of the newscast by multiple-choice items, the respondents could select the correct responses equally well for both programs. Since the selected newscasts were fairly typical of the types of local newscasts on the air, it also seems reasonable to

assume that similar results would be found with other newscasts of the same pacing values. Since it had been demonstrated in the pilot study that the content of both newscasts was equivalent in terms of complexity and the number of key information points, the results of this study lead to the conclusion that pacing could be a major factor in recall and that faster pacing results in greater recall of television news programs.

On the basis of one study it would be inappropriate to generalize these findings beyond the types of programs tested. Further research in the area of pacing and recall is necessary.

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Appendix One

TELEVISION PROGRAM PACING VALUE SCALE

This scale was developed by the researcher to quantify various key production elements. These elements are listed below. In figuring, the pacing value, points are counted as indicated in the listing. The length of the segment is also recorded. The total number of points is divided by the number of minutes and portions thereof of the segment. This figure is a per minute value for most of the major variables which combine to produce the quality known as pacing.(#of pacing points ÷ #of minutes

The number of words presented in the program segment is then determined. This figure is then divided by the number of seconds in the segment (#of words ÷ (#of minutes x 60). The resulting words-per-second figure is then added to the the per-minute-value of the other pacing variables as determined by following the instructions in the paragraph above. The total--per-minute-value + words-per--second value--equals the Program Pacing Value.

For video and audio variables, excluding number of words, one point is recorded for each of the following factors:

1. Each different story or bit (defined as a different topic of content, even if related.).
2. Each visual source (film, videotape, slide, still, live camera shot) each time it is used. Primary usage.
3. Each audio source (voice, music, sound effect, natural sound) each time it is used. Primary usage.
4. Each background visual presented.
5. Each background audio source.
6. Each keyed insert.
7. Each foreground title, name, or informational key or super.
8. Each cut or take (video or audio) in primary usage sources.
9. Each scene within a film, videotape, or live camera sequences used as a background or a keyed visual.

The following production elements receive a 0 point weight because they tend to slow pacing. However, they should be recorded if content analysis of the production techniques of the material is desired: Each dissolve/fade/wipe (visual) or cross-fade fade-up or down (audio), each zoom or pan.